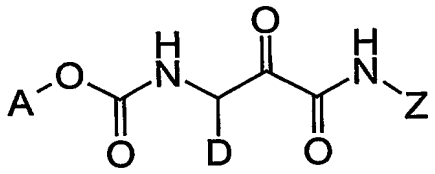
CLAIMS

We claim:

1. A compound of Formula (I):



(I)

or a salt, solvate, or physiologically functional derivative thereof:
wherein

A is the group defined by (Q^3)-$(Q^2)_n$-(Q^1)-$(Q)_m$-, wherein

Q is CH_2 and m is 0, 1, or 2

Q^1 is C_3-C_7 cycloalkylene;

Q^2 is C_1-C_3 alkylene and n is 0 or 1, or

Q^2 is OR, where R is C_1-C_3 alkylene and n is 1,

Q^2 is SR, where R is C_1-C_3 alkylene and n is 1; or

Q^2 is N(R')R, where R' is hydrogen or C_1-C_6 alkyl, R is C_1-C_3 alkylene and n is 1; and

Q^3 is aryl, heteroaryl, or aryl or heteroaryl substituted with at least one independently selected R^1 group;

D is C_1-C_6 alkyl or C_1-C_6 alkyl substituted with $-NR^2R^3$;

Z is the group defined by $-(X)_p-(X^1)_q-(X^2)$, wherein

X is C(R')(R''), wherein R' is hydrogen or C_1-C_6 alkyl, R'' is hydrogen and C_1-C_6 alkyl, and p is 0, 1, or 2,

X^1 is $C(O)OCH_2$, wherein q is 0 or 1, and

X^2 is aryl, heteroaryl, or heterocyclyl;

R^1 is halo, C_1-C_6 alkyl, aryl, heterocyclyl, or C_1-C_6 haloalkyl;

R^2 is hydrogen or C_1-C_6 alkyl;

R^3 is hydrogen, C_1-C_6 alkyl, $-C(O)R^4$, or $-S(O)_2NR^5R^6$;

R^4 is heterocyclyl, $-NR^5R^6$, and

R^5 and R^6 are independently selected from hydrogen or C_1-C_6 alkyl.

2. A compound as claimed in claim 1, wherein n is 0 and A is (Q^3)-(Q^1)-$(Q)_m$-.

3. A compound as claimed in claim 1, wherein m is 0 and A is (Q^3)-$(Q^2)_n$-(Q^1)-.

4. A compound as claimed in claim 1, wherein m and n are both 0 and A is (Q^3)-(Q^1)-.

5. A compound as claimed in claim 1, wherein Q is CH_2 and m is 0, 1, or 2.

6. A compound as claimed in claim 1, wherein Q is CH_2 and m is 0 or 1.

7. A compound as claimed in claim 1, wherein Q is CH_2 and m is 1.

8. A compound as claimed in claim 1, wherein Q^1 is C_3-C_7 cycloalkylene.

9. A compound as claimed in claim 1, wherein Q^1 is selected from the group cyclobutylene, cyclopentylene or cyclohexylene,

10. A compound as claimed in claim 1, wherein Q^1 is cyclobutylene.

11. A compound as claimed in claim 1, wherein Q^2 is C_1-C_3 alkylene and n is 0 or 1.

12. A compound as claimed in claim 1, wherein Q^2 is C_1-C_3 alkylene and n is 1.

13. A compound as claimed in claim 1, wherein Q^2 is OR, wherein R is C_1-C_3 alkylene and n is 1.

14. A compound as claimed in claim 1, wherein Q^2 is SR, wherein R is C_1-C_3 alkylene and n is 1.

15. A compound as claimed in claim 1, wherein Q^3 is aryl or aryl substituted with at least one independently selected R^1 group.

16. A compound as claimed in claim 1, wherein Q^3 is phenyl or phenyl substituted with at least one independently selected R^1 group wherein R^1 is halo or C_1-C_6 alkyl.

17. A compound as claimed in claim 16, wherein R^1 is halo.

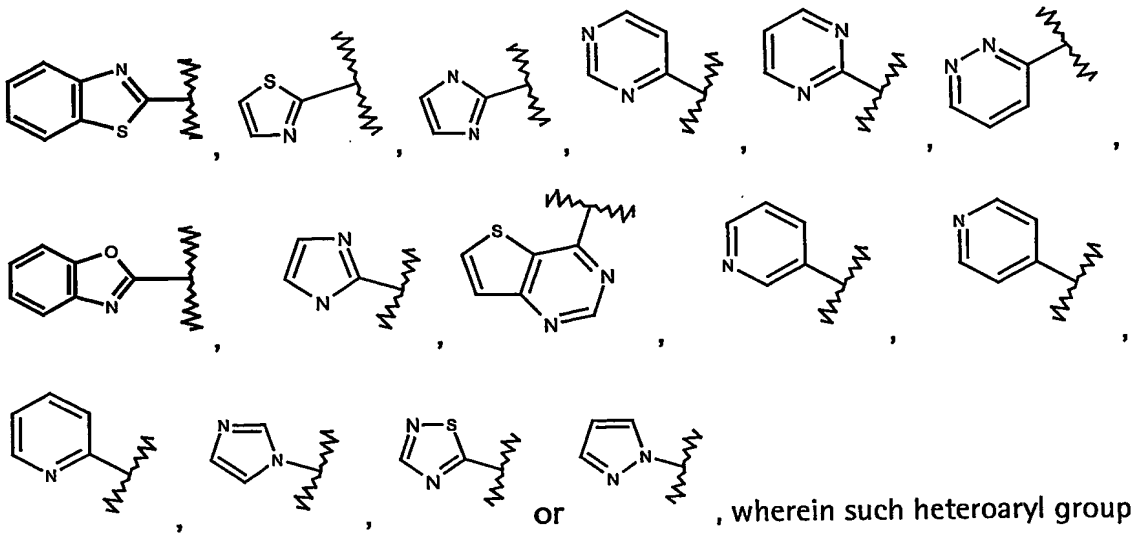
18. A compound as claimed in claim 16, wherein R^1 is fluoro or chloro.

19. A compound as claimed in claim 16, wherein R^1 is C_1-C_6 alkyl.

20. A compound as claimed in claim 16, wherein, R^1 is methyl.

21. A compound as claimed in claim 1, wherein Q^3 is heteroaryl or heteroaryl substituted with at least one independently selected R^1.

22. A compound as claimed in claim 1, wherein Q^3 is selected from the group



, wherein such heteroaryl group is substituted with at least one independently selected R^1, wherein R^1 is halo, C_1-C_6 alkyl, aryl, heterocyclyl, or C_1-C_6 haloalkyl.

23. A compound as claimed in claim 22, wherein R^1 is chloro.

24. A compound as claimed in claim 22, wherein R^1 is methyl.

25. A compound as claimed in claim 22, wherein R^1 is phenyl.

26. A compound as claimed in claim 22, wherein R^1 is piperazinyl or morpholinyl.

27. A compound as claimed in claim 22, wherein R^1 is trifluoromethyl.

28. A compound as claimed in claim 1, wherein D is C_1-C_6 alkyl or C_1-C_6 alkyl substituted with $-NR^2R^3$, wherein R^2 is hydrogen and R^3 is $-C(O)R^4$ or $-S(O)_2NR^5R^6$.

29. A compound as claimed in claim 1, wherein D is C_1-C_6 alkyl.

30. A compound as claimed in claim 1, wherein D is n-butyl.

31. A compound as claimed in claim 1, wherein In one embodiment, p is 0 and Z is $-(X^1)_q-X^2$.

32. A compound as claimed in claim 1, wherein p is 1 and Z is the group defined by $-(X)-(X^1)_q-X^2$.

33. A compound as claimed in claim 1, wherein q is 0 and Z is the group defined by $-(X)_p-X^2$.

34. A compound as claimed in claim 1, wherein X is C(R')(R''), wherein R' is hydrogen or C_1-C_6 alkyl, R'' is hydrogen and C_1-C_6 alkyl, and p is 0, 1, or 2.

35. A compound as claimed in claim 1, wherein X is C(H)(R'') where R'' is hydrogen and p is 0, 1, or 2.

36. A compound as claimed in claim 1, wherein X is C(H)(R'') where R'' is hydrogen and p is 0 or 1.

37. A compound as claimed in claim 1, wherein X is C(H)(R'') where R'' is hydrogen and p is 0.

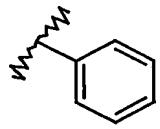
38. A compound as claimed in claim 1, wherein X is C(H)(R'') where R'' is $-CH_3$ and p is 1.

39. A compound as claimed in claim 1, wherein X^1 is $C(O)OCH_2$, wherein q is 1.

40. A compound as claimed in claim 1, wherein X^1 is $C(O)OCH_2$, wherein q is 0.

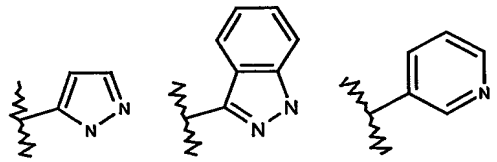
41. A compound as claimed in claim 1, wherein X^2 is aryl.

42. A compound as claimed in claim 1, wherein X^2 is



43. A compound as claimed in claim 1, wherein X^2 is heteroaryl or heterocyclyl.

44. A compound as claimed in claim 1, wherein X^2 is selected from the group



, or substituted derivatives thereof.

45. A compound selected from the group consisting of:

1-benzylcyclobutyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
1-benzylcyclopentyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
benzyl(2S)-2-{[(3S)-3-({[(1-benzylcyclopentyl)oxy]carbonyl}amino)-2-oxoheptanoyl]amino}propanoate;
1-benzylcyclohexyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
(1-Benzylcyclobutyl)methyl(1S)-1-(oxo{[(1R)-1-phenylethyl]amino} acetyl) pentyl carbamate;
[1-(2-Phenylethyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl] amino} acetyl) pentylcarbamate;
[1-(3-Phenylpropyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino} acetyl) pentylcarbamate;
(1-Benzylcyclopentyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl) pentyl carbamate;
(1-benzylcyclohexyl)methyl (1S)-5-[(4-morpholinylcarbonyl)amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
[1-(4-Fluorobenzyl)cyclobutyl]methyl (1S)-5-[(4-morpholinylcarbonyl)amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(4-Pyridinylmethyl)cyclobutyl]methyl (1S)-5-[(4-morpholinylcarbonyl)amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(3-pyridinylmethyl)cyclobutyl]methyl (1S)-5-[(4-morpholinylcarbonyl)amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(2,6-difluorobenzyl)cyclobutyl]methyl (1S)-5-{[(methylamino)carbonyl]amino}-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(4-Fluorobenzyl)cyclobutyl]methyl (1S)-1-[oxo(1H-pyrazol-5-ylamino)acetyl] pentylcarbamate;

[1-(4-fluorobenzyl)cyclobutyl]methyl (1S)-1-[[(6-chloro-1H-indazol-3-yl)amino](oxo) acetyl]pentylcarbamate;

[1-(4-fluorobenzyl)cyclobutyl]methyl (1S)-5-{[(dimethylamino)sulfonyl]amino}-1-{oxo[(3-pyridinylmethyl)amino]acetyl}pentylcarbamate;

1-(1,3-Benzothiazol-2-yl)cyclopentyl (1S)-1-[oxo(1H-pyrazol-3-ylamino)acetyl] pentylcarbamate;

{1-[(4-phenyl-1,3-thiazol-2-yl)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{[(1-methyl-1H-imidazol-2-yl)sulfanyl]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{[(2-chloro-4-pyrimidinyl)oxy]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-({[2-(4-methyl-1-piperazinyl)-4-pyrimidinyl]oxy}methyl)cyclobutyl] methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-({[2-(4-morpholinyl)-4-pyrimidinyl]oxy}methyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(2-pyrimidinylsulfanyl)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(1,3-benzoxazol-2-ylsulfanyl)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(1,3-thiazol-2-yloxy)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{[(3-phenyl-1,2,4-thiadiazol-5-yl)oxy]methyl}cyclobutyl)methyl (1S)-1-(oxo {[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-({[2-(4-phenyl-1-piperazinyl)-4-pyrimidinyl]oxy}methyl)cyclobutyl] methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{[(1-phenyl-1H-imidazol-2-yl)sulfanyl]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1- phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(thieno[3,2-d]pyrimidin-4-yloxy)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(2-pyrimidinyloxy)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-({[4-(4-methylphenyl)-1,3-thiazol-2-yl]oxy}methyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(hydroxymethyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino} acetyl)pentylcarbamate;

[1-({[4-(4-chlorophenyl)-2-pyrimidinyl]sulfanyl}methyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-({[5-(4-chlorophenyl)-1-methyl-1H-imidazol-2-yl]sulfanyl}methyl) cyclobutyl] methyl (1S)-1-(oxo{[(1R)-1-phenylethyl] amino} acetyl)pentylcarbamate;

{1-[(4-methyl-1,3-thiazol-2-yl)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{2-[(1-methyl-1H-imidazol-2-yl)sulfanyl]ethyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{3-[(1-methyl-1H-imidazol-2-yl)sulfanyl]propyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1- phenylethyl]amino}acetyl)pentylcarbamate; and

(1-{3-[(2-chloro-4-pyrimidinyl)oxy]propyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

or a salt, solvate, or physiologically functional derivative thereof.

46. A pharmaceutical composition comprising a therapeutically effective amount of a compound as claimed in claims 1 to 44, or a salt, solvate, or a physiologically functional derivative thereof and one or more of pharmaceutically acceptable carriers, diluents and excipients.

47. A method of treating a disorder in a mammal, said disorder being characterized by enhanced bone turnover which can ultimately lead to fracture, comprising: administering to said mammal a therapeutically effective amount of a compound as claimed in claims 1 to 44 or a salt, solvate or a physiologically functional derivative thereof.

48. A method of treating a disorder in a mammal, said disorder being characterized by bone loss, comprising: administering to said mammal a therapeutically effective amount of a compound as claimed in claims 1 to 44 or a salt, solvate or a physiologically functional derivative thereof.

49. A compound as claimed in claims 1 to 44, or a salt, solvate, or a physiologically functional derivative thereof for use in therapy.

50. Use of a compound as claimed in claims 1 to 44, or a salt, solvate, or a physiologically functional derivative thereof in the preparation of a medicament for use in the treatment of a disorder characterized by bone loss.

51. A method of treating osteoporosis, comprising: administering to said mammal a therapeutically effective amount of a compound as claimed in claims 1 to 44, or a salt, solvate or physiologically functional derivative thereof.

52. A method of treating osteoporosis, comprising: administering to said mammal therapeutically effective amounts of (i) a compound as claimed in claims 1 to 44, or a salt, solvate or physiologically functional derivative thereof and (ii) at least one bone building agent.